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09/818,970	03/27/2001	Richard S. Haendel	00CR010/KE	9852

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EXAMINER	
SHAHRIER, SHARIF M	
ART UNIT	**PAPER NUMBER**
2664	

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/818,970	HAENDEL, RICHARD S.	
	Examiner	Art Unit	
	Sharif M Shahrier	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 March 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETALED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

   (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 4, 6, 9, 10, 19, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gray (US 4,567,591) , and in view of Uehara (US 3,873,777).

Regarding claim 1, Gray teaches an apparatus and method for the transmission and reception of a plurality of digital audio signals over a transmission medium. Gray teaches the transmitter and receiver systems (Fig. 1). Gray teaches the digital encoding of multiplicity of audio channels using **Source Encoders** (Fig. 1 elmt 104). Gray teaches the modulation function **Encoder Modulator** (Fig. 1 elmt 111). However, while Gray does teach time division multiplexer (TDM) (Fig. 1 elmt 106), he doesn't explicitly disclose whether it is layered into first layer and second layer multiplexers.

However, Uehara does teach two layers of multiplexing. The first layer of TDM comprises of elements **91** and **93** in Fig. 6. The second layer of TDM comprises of element **109** in Fig. 6. Uehara further teaches that components 87 ad 89 provided

synchronization and timing signals for the PCM frame (col 8 ln 11-17). The "S" and b_c signals provides frame synchronization and timing inputs to the first layer TDM multiplexers, which are combined with the plurality of digital audio signals. In a similar manner, frame synchronization can be achieved for the second layer TDM multiplexer.

The entire components of Fig. 6 in Uehara can be incorporated into the element block **106** in Gray.

In view of this, having the system of Gray and then given the teaching of Uehara, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Gray to incorporate the teachings of Uehara.
The motivation to combine is because the two-layered TDM multiplexers allow a large number of audio channels to be multiplexed for transmission without requiring excessive bandwidth.

Regarding claim 4, Gray and Uehara discloses all aspects of the claimed invention set forth in the rejection of claims 1 and 2, and Gray further teaches 70Mhz wideband RF carrier modulation for the transmitter, and it is common knowledge that such modulation facilitates low transmission power (col 3 ln 45-48). The presence of a plurality of receivers is due to multiple "listeners" or subscribers to the video broadcast.

Regarding claim 6, Gray and Uehara discloses all aspects of the claimed invention set forth in the rejection of claims 1, 2 and 5, and Gray further teaches a **Digital Compressor** (Fig. 1 elmt 106) for compressing digitally encoded audio signals.

Regarding claim 9, Gray and Uehara discloses all aspects of the claimed invention set forth in the rejection of claims 1, 2 and 5-8.

Gray does not explicitly disclose TDM multiplexers with 128 Kb/s synchronization and control channel.

However, Uehara teaches 50 audio channels which are TDM multiplexed with aggregate transmission rate of 4.284 MHz (Fig. 6 elmt 91) ~ 4.096 MHz as specified in claim 9. Synchronization and control signals proceed at the same repetition rate as each audio channel. Thus, each channel rate is 4.284/50 = 85.68 kb/s ~ 128 kb/s (col 13 ln 13-14). This is also the rate of the synchronization and control channel.

In view of this, having the system of Gray and then given the teaching of Uehara, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Gray to incorporate the teachings of Uehara.

The motivation to combine is because TDM multiplexing allows the aggregation of multiple low-rate audio channels into a higher-rate digital bit-stream for the purposes of modulating a high-speed carrier.

Regarding claim 10, Gray and Uehara discloses all aspects of the claimed invention set forth in the rejection of claims 1, 2 and 5-9.

Gray does not explicitly disclose a TDM multiplexer to combine 15 channels.

However, Uehara teaches the multiplexing of 3 signals A, B and C, each with transmission rate 4.284 Mb/s into a single composite channel rate 12.852 Mb/s.

The number of channels (3) and the transmission rate (12.852 Mb/s) is of the same order of magnitude as 15 and 65.44 Mb/s respectively.

In view of this, having the system of Gray and then given the teaching of Uehara, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Gray to incorporate the teachings of Uehara.

The motivation to combine is because TDM multiplexing allows the aggregation of multiple low-rate audio channels into a higher-rate digital bit-stream for the purposes of modulating a high-speed carrier.

Regarding claim 19, Gray and Uehara discloses all aspects of the claimed invention set forth in the rejection of claims 12-16 and 18.

Gray does not explicitly disclose TDM multiplexers with 128 Kb/s synchronization and control channel.

However, Uehara teaches 50 audio channels which are TDM multiplexed with aggregate transmission rate of 4.284 MHz (Fig. 6 elmt 91) ~ 4.096 MHz as specified in claim 19.

Synchronization and control signals proceed at the same repetition rate as each audio channel. Thus, each channel rate is 4.284/50 = 85.68 kb/s ~ 128 kb/s (col 13 ln 13-14). This is also the rate of the synchronization and control channel.

In view of this, having the system of Gray and then given the teaching of Uehara, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Gray to incorporate the teachings of Uehara.
The motivation to combine is because TDM multiplexing allows the aggregation of multiple low-rate audio channels into a higher-rate digital bit-stream for the purposes of modulating a high-speed carrier.

Regarding claim 20, Gray and Uehara discloses all aspects of the claimed invention set forth in the rejection of claims 12-16, 18 and 19.
Gray does not explicitly disclose a TDM multiplexer to combine 15 channels.
However, Uehara teaches the multiplexing of 3 signals A, B and C, each with transmission rate 4.284 Mb/s into a single composite channel rate 12.852 Mb/s.

The number of channels (3) and the transmission rate (12.852 Mb/s) is of the same order of magnitude as 15 and 65.44 Mb/s respectively.

In view of this, having the system of Gray and then given the teaching of Uehara, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Gray to incorporate the teachings of Uehara.
The motivation to combine is because TDM multiplexing allows the aggregation of multiple low-rate audio channels into a higher-rate digital bit-stream for the purposes of modulating a high-speed carrier.

3. Claims 2, 3, 5, 7, 8, 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gray and Uehara as applied to claim 1 above, and further in view of Kostreski (US 5,651,010).

Regarding claim 2, Gray and Uehara discloses all aspects of the claimed invention set forth in the rejection of claims 1.
These references do not explicitly disclose the modulation of video channels on one of a plurality of different RF carrier signals.
However, Kostereski teaches Quadrature Amplitude Modulation (QAM) (Fig. 6A elmt 13) for modulating video channels on one of a plurality of different RF carrier signals.

In view of this, having the combined system of Gray and Uehara, and then given the teaching of Kostreski, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the systems of Gray and Uehara to incorporate the teachings of Kostreski.

The motivation to combine is because QAM allows efficient efficient modulation of multiple wideband audio/video channels.

Regarding claim 3, Gray and Uehara discloses all aspects of the claimed invention set forth in the rejection of claims 1 and 2.
These references do not explicitly disclose coaxial cable as transport medium.
However, Kostreski teaches a video distribution and broadcast system to transport video to multiple customer devices. Kosterski uses coaxial cable to transport the video (col 20 ln 6-9).

In view of this, having the combined system of Gray and Uehara, and then given the teaching of Kostreski, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the systems of Gray and Uehara to incorporate the teachings of Kostreski.
The motivation to combine is because coaxial cable provides low loss, low interference transport medium for real-time services such as video.

Regarding claim 5, Gray and Uehara discloses all aspects of the claimed invention set forth in the rejection of claims 1 and 2.
These references do not explicitly disclose modulation circuitry of an audio system coupled to a data network.

However, Kostreski teaches QAM modulation coupled to data network using coaxial cable. (col 20, ln 6-9). The modulated RF audio signal is transmitted over the data network.

In view of this, having the combined system of Gray and Uehara, and then given the teaching of Kostreski, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the systems of Gray and Uehara to incorporate the teachings of Kostreski.

The motivation to combine is because QAM allows efficient efficient modulation of multiple wideband audio/video channels for transmission over a low loss terrestrial link such as coaxial cable.

Regarding claim 7, Gray and Uehara discloses all aspects of the claimed invention set forth in the rejection of claims 1, 2 5 and 6.

These references do not explicitly disclose the MPEG encoder.

However, Kostreski teaches the encoding of video using MPEG (Fig. 6A elmt 11).

In view of this, having the combined system of Gray and Uehara, and then given the teaching of Kostreski, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the systems of Gray and Uehara to incorporate the teachings of Kostreski.

The motivation to combine is because MPEG is a universally used video encoding standard allowing compatibility between wide range of devices.

Regarding claim 8, Gray and Uehara discloses all aspects of the claimed invention set forth in the rejection of claims 1, 2, and 5-7.

These references do not explicitly disclose the MPEG-2 encoder.

However, Kostreski teaches the encoding of video using MPEG-2. He further teaches fixed transport packet size of 188 bytes (col 13 ln 5), at a transmission rate of 4000 packets/sec. This translates to a MPEG-2 encoding rate of approximately 6 Mbits/sec. This speed can easily accommodate 128 Kbits/sec encoding rate of claim 8.

In view of this, having the combined system of Gray and Uehara, and then given the teaching of Kostreski, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the systems of Gray and Uehara to incorporate the teachings of Kostreski.

The motivation to combine is because MPEG-2 is a universally used video encoding standard allowing compatibility between wide range of devices.

Regarding claim 11, Gray and Uehara discloses all aspects of the claimed invention set forth in the rejection of claims 1, 2, 5-10.

These references do not explicitly disclose modulation using 128 QAM.

However, Kostreski 64 QAM (Quadrature Amplitude Modulation) and higher rate 256 QAM. Thus, x-QAM is where "x" is a power of 2. Hence, 128 QAM has a frequency between 64 QAM and 256 QAM and can be derived in a similar manner.

In view of this, having the combined system of Gray and Uehara, and then given the teaching of Kostreski, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the systems of Gray and Uehara to incorporate the teachings of Kostreski.
The motivation to combine is because QAM allows efficient efficient modulation of multiple wideband audio/video channels for transmission over a low loss terrestrial link such as coaxial cable.

Regarding claim 12, Gray teaches an apparatus and method for the transmission and reception of a plurality of digitally encoded audio signals over a transmission medium. Gray teaches the transmitter and receiver systems (Fig. 1). Gray teaches the digital encoding of multiplicity of audio channels using **Source Encoders** (Fig. 1 elmt 104). Gray teaches the modulation function **Encoder Modulator** (Fig. 1 elmt 111). However, while Gray does teach time division multiplexer (TDM) (Fig. 1 elmt 106), he doesn't explicitly disclose the combining of signals using two layers of multiplexing.

However, Uehara does teach two layers of multiplexing. The first layer of TDM comprises of elements **91** and **93** in Fig. 6. The second layer of TDM comprises of

element **109** in Fig. 6. The aggregate rate at the output of each multiplexer is higher than the individual input rates.

The entire components of Fig. 6 in Uehara can be incorporated into the element block **106** in Gray.

In view of this, having the system of Gray and then given the teaching of Uehara, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Gray to incorporate the teachings of Uehara.
The motivation to combine is because the two-layered TDM multiplexers allow a large number of audio channels to be multiplexed for transmission without requiring excessive bandwidth.

Regarding claims 13, Gray and Uehara discloses all aspects of the claimed invention set forth in the rejection of claim 12, and Uehara further teaches transmission of a plurality of audio and video signals (abstract ln 1-6).
Neither reference teaches the modulation of video channels on one of a plurality of modulated RF carrier signals.
However, Kostreski teaches the modulation of video by an RF signal using QAM modulation (Fig. 6 elmt 13). QAM modulates digital video onto plurality of different carrier signals and transmits it to passengers over a data network, such as coaxial cable (col 20 ln 6-9).

In view of this, having the combined system of Gray and Uehara, and then given the teaching of Kostreski, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the systems of Gray and Uehara to incorporate the teachings of Kostreski.

The motivation to combine is because QAM allows efficient efficient modulation of multiple wideband audio/video channels for transmission over a low loss terrestrial link such as coaxial cable.

Regarding claims 14, the combined methods of Gray, Uehara and Kostreski discloses all aspects of the claimed invention set forth in the rejection of claims 12 and 13, and Gray further teaches further teaches the reception of RF signals by antenna (Fig. 1 elmt 120), passed to amplifier (Fig. 1 elmt 122) and the sacling of frequency by a down counter (Fig. 1 elmt 124). The arrangement of these elements shall be referred to as "RF tuner". Gray further teaches the conversion of selected digital audio channel into an audio signal using **Source Decoders** (Fig. 1 elmt 132).

The separation of digital audio channels corresponds to "demultiplexing". Neither Gray nor Uehara explicitly discloses demultiplexing. This operation can be achieved by reversing the signal flow through the apparatus in Fig. 6 as depicted by Kostreski.

In view of this, having the combined system of Gray and Uehara, and then given the teaching of Kostreski, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the systems of Gray and Uehara to incorporate the teachings of Kostreski.

The motivation to combine is because multiplexing and demultiplexing have a reverse dual-purpose in transmitter and receiver sub-systems, and oftentimes may be used interchangeably.

Regarding claims 15, the combined methods of Gray, Uehara and Kostreski discloses all aspects of the claimed invention set forth in the rejection of claims 12-14, and Gray further teaches transmitting audio signals to the receiver system (Fig. 1). This is analogous to providing audio signal to audio device controls associated with audio device (receiver) at the passenger location.

Regarding claims 16, the combined methods of Gray, Uehara and Kostreski discloses all aspects of the claimed invention set forth in the rejection of claims 12-15, and Gray further teaches a **Digital Compressor** (Fig. 1 elmt 106) for compressing each of the digital audio channels.

Regarding claim 17, Gray and Uehara discloses all aspects of the claimed invention set forth in the rejection of claims 12-16.

These references do not explicitly disclose the MPEG encoder.

However, Kostreski teaches the encoding of video using MPEG (Fig. 6A elmt 11).

In view of this, having the combined system of Gray and Uehara, and then given the teaching of Kostreski, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the systems of Gray and Uehara to incorporate the teachings of Kostreski.
The motivation to combine is because MPEG is a universally used video encoding standard allowing compatibility between wide range of devices.

Regarding claims 18, Gray and Uehara discloses all aspects of the claimed invention set forth in the rejection of claims 12-16.
These references do not explicitly disclose the MPEG-2 encoder.
However, Kostreski teaches the encoding of video using MPEG-2. He further teaches fixed transport packet size of 188 bytes (col 13 ln 5), at a transmission rate of 4000 packets/sec. This translates to a MPEG-2 encoding rate of approximately 6 Mbits/sec. This speed can easily accommodate 128 Kbits/sec encoding rate of claim 18.

In view of this, having the combined system of Gray and Uehara, and then given the teaching of Kostreski, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the systems of Gray and Uehara to incorporate the teachings of Kostreski.

The motivation to combine is because MPEG-2 is a universally used video encoding standard allowing compatibility between wide range of devices.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharif M Shahrier whose telephone number is (571) 272-3136. The examiner can normally be reached on 8:30-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SMS

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